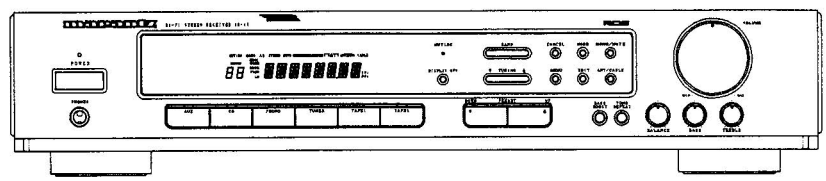
Service Manual

74SR47/01B/02B/05B

Hi-Fi Stereo Receiver



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Please use this service manual with referring to the user guide (D.F.U) without fail.

marantz®

PCS 88 288

model SR-47

Printed in Japan

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2. Complete part numbers and quantities required
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4. Model number for which part is required
5. Way of shipment
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SINGAPORE I 59099,
PHONE : +65 475 - 4555
FAX : +65 475 - 8623

SHOCK, FIRE HAZARD SERVICE TEST :

CAUTION : After servicing this appliance and prior to returning to customer, measure the resistance between either primary AC cord connector pins (with unit NOT connected to AC mains and its Power switch ON), and the face or Front Panel of product and controls and chassis bottom.

Any resistance measurement less than 1 Megohms should cause unit to be repaired or corrected before AC power is applied, and verified before it is return to the user/customer.

Ref. UL Standard N0. 813.

In case of difficulties, do not hesitate to contact the Technical Department at above mentioned address.

1. TECHNICAL SPECIFICATIONS

FM TUNER SECTION

Frequency range ..... 87.5 – 108MHz
Sensitivity
DIN mono (S/N 26dB, 98MHz, 75Ω) 1μV
DIN stereo (S/N 46dB, 98MHz, 75Ω) 30μV
Selectivity adjacent channel 98MHz 60dB
Tuner output (1kHz, 75kHz deviation) 1200mV
Signal to noise ratio
S/N DIN weighted mono 74dB
S/N DIN weighted stereo 69dB
Total harmonic distortion mono (1kHz, 40kHz dev.) ..... < 0.2%
Total harmonic distortion stereo (1kHz, 40kHz dev.) ..... < 0.4%
Accuracy of frequency response across 30Hz – 15kHz bandwidth ..... +0.5 / -1.5dB

MW TUNER SECTION

Frequency range ..... /01 version: 520 – 1710kHz
..... 531 – 1602kHz
..... /02 and /05 version: 531 – 1602kHz
Sensitivity (S/N 20dB, 30% mod., 999kHz) 500μV/m
Selectivity (999kHz, 9kHz) 35dB
Signal to noise ratio at 999kHz 52dB

LW TUNER SECTION

Frequency range ..... 153 – 281kHz
Sensitivity (S/N 20dB 30% mod. 207kHz) 1800μV/m
Signal to noise ratio at 207kHz 52dB

AMPLIFIER SECTION

Power output — DIN 4Ω 53W
DIN 8Ω 42W
RMS 8Ω 40W
Dynamic power 8Ω/ 4Ω ..... 60 / 95W
T.H.D. at 8Ω rated RMS output at 1kHz ..... 0.01% / 0.015%
Damping factor 58
Input sensitivity — : PHONO ..... 2mV / 47kΩ
: CD / AUX / TAPE1 / TAPE2 ..... 175mV / 47kΩ
S/N — : PHONO 74dB
: CD / AUX / TAPE1 / TAPE2 ..... 93dB

POWER REQUIREMENTS

/ 02 version ..... 230V AC, 50 / 60Hz
/ 05 version ..... 240V AC, 50 / 60Hz
/ 01 version ..... 110 – 120 / 220 – 240V AC, 50 / 60Hz

DIMENSIONS

Width 439mm
Height ..... (W/out Leg.) 75mm
Depth 300mm

WEIGHT 6.5kg

2. TEST MODE

To start the Test press and hold the buttons "AUX" and "MONO/MUTE" simultaneously while switching on with the "POWER" button.

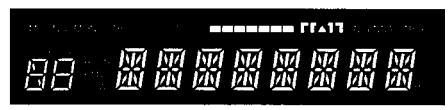
- After switching on the display shows whether the EEPROM is in order.

- After the EEPROM check, the country versions is shown in the display.

Europe version

USA version

- Now all segments in the display will be illuminated on after another.

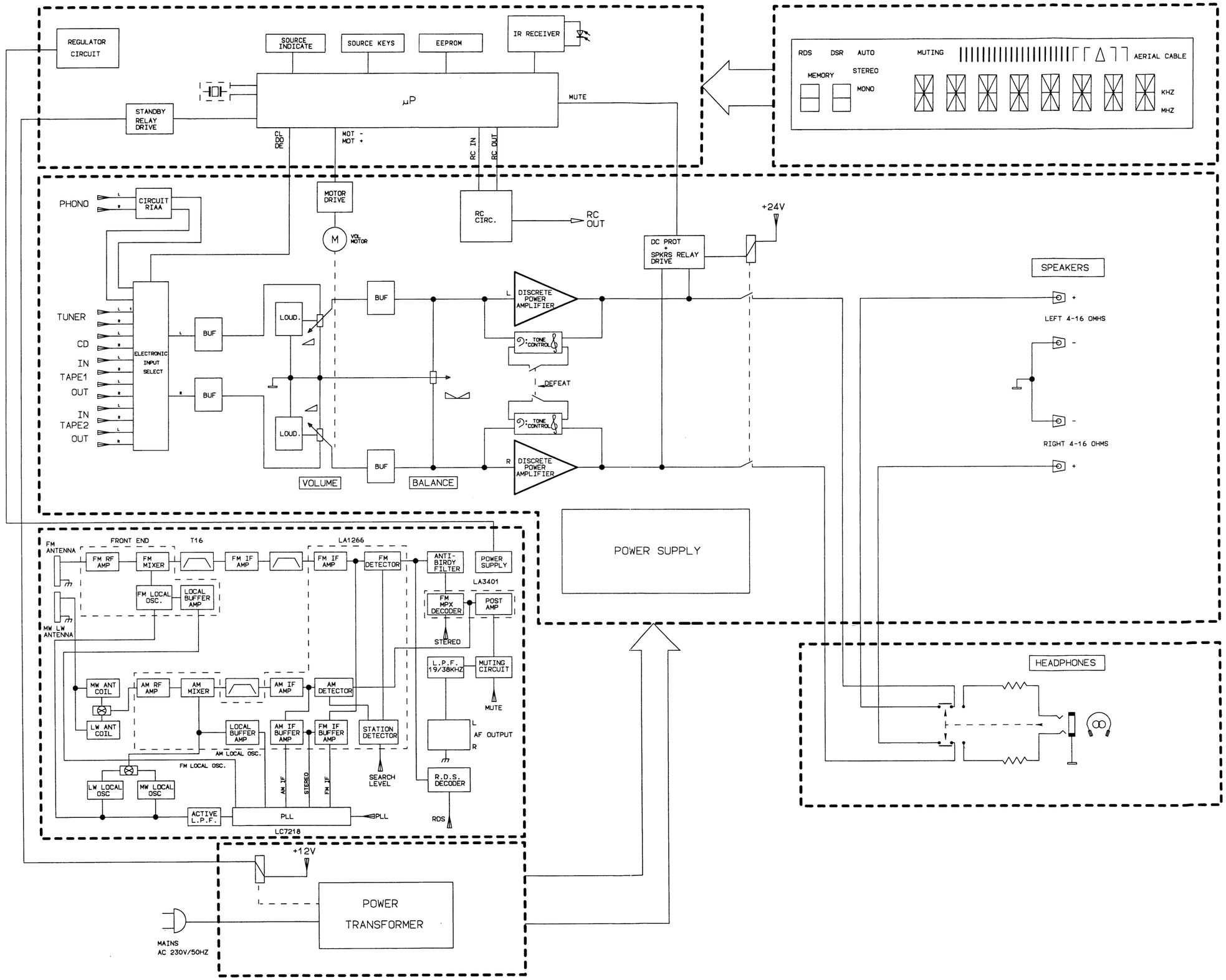


- After a few secounds the display changes to:

- When pressing one of the buttons, the respective button is shown in the display:

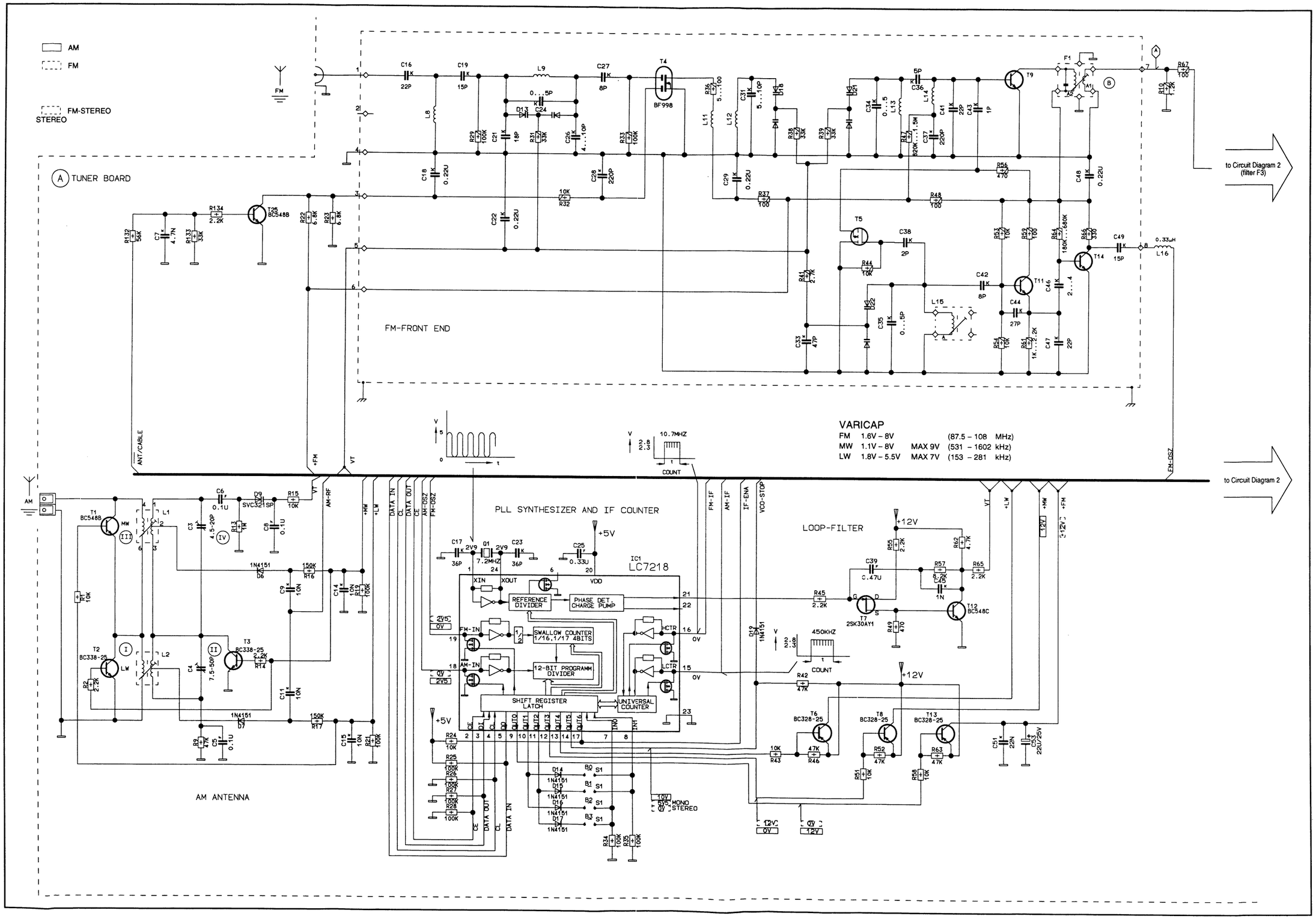
The Test Mode can be stopped only by switching the receiver off.

3. BLOCK DIAGRAM



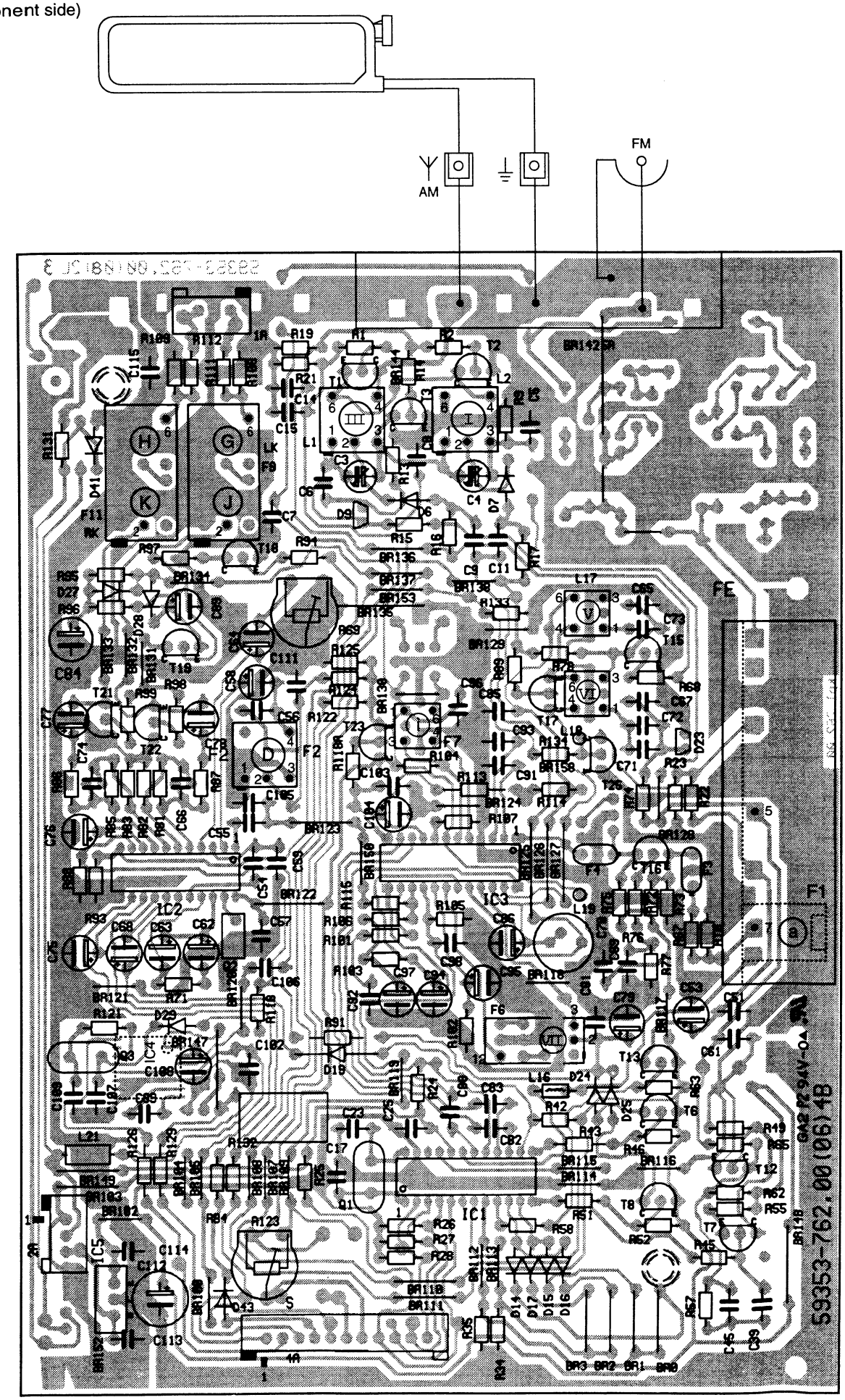
4. SCHEMATIC DIAGRAM AND PARTS LOCATION (Pattern Side)

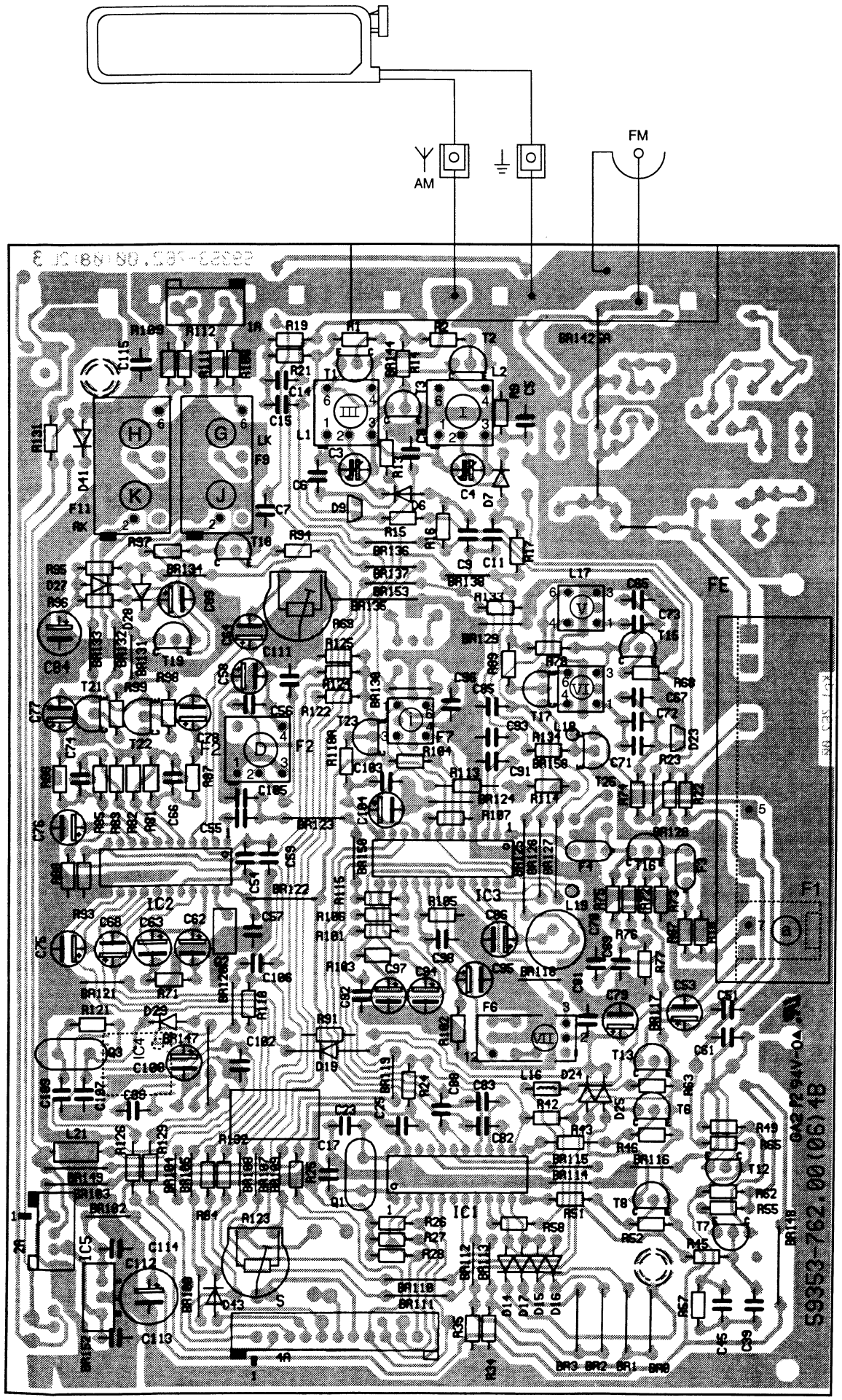
4.1 SCHEMATIC DIAGRAM TUNER BOARD - PART 1



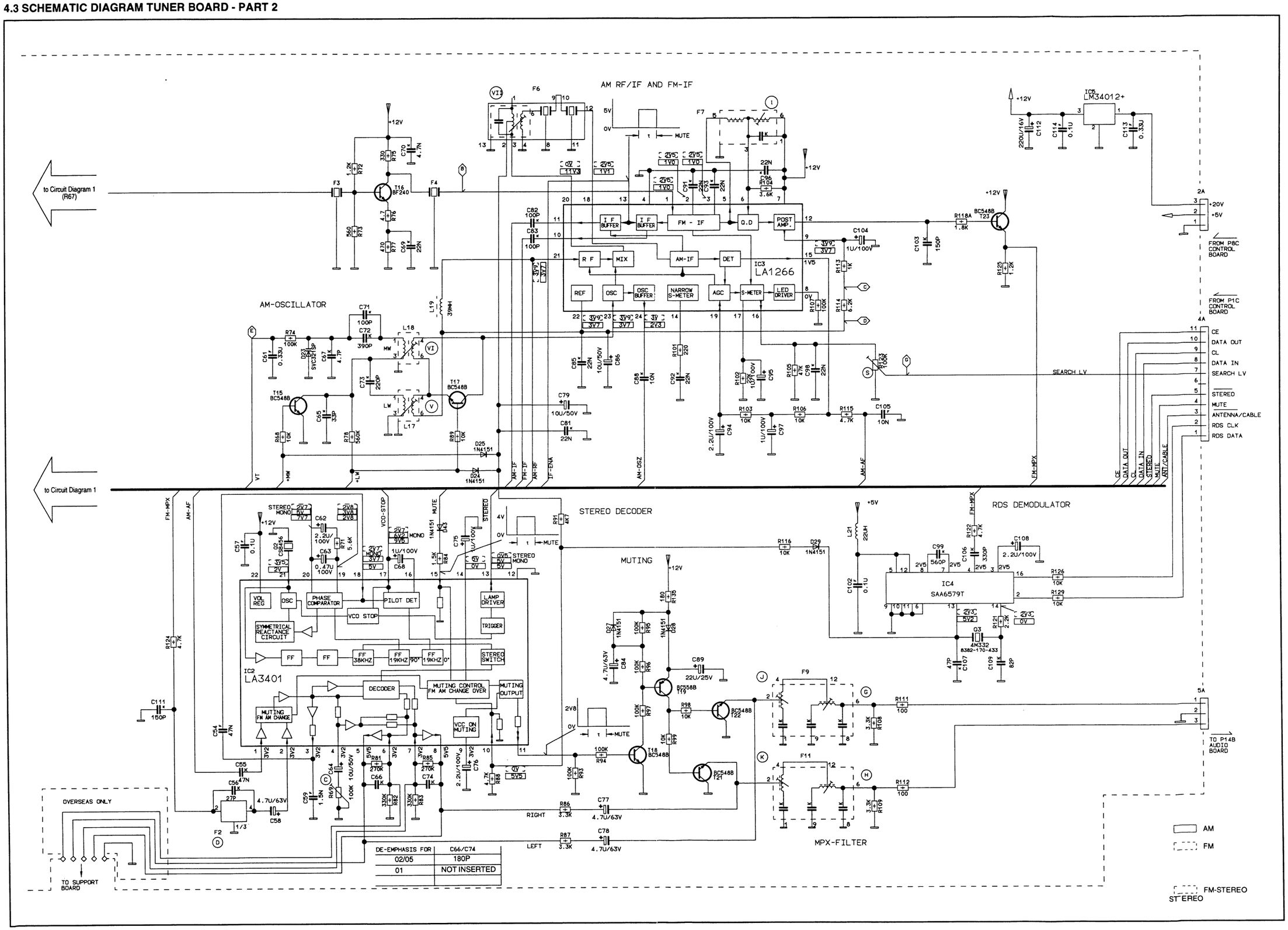
4.2 TUNER PCB

(component side)

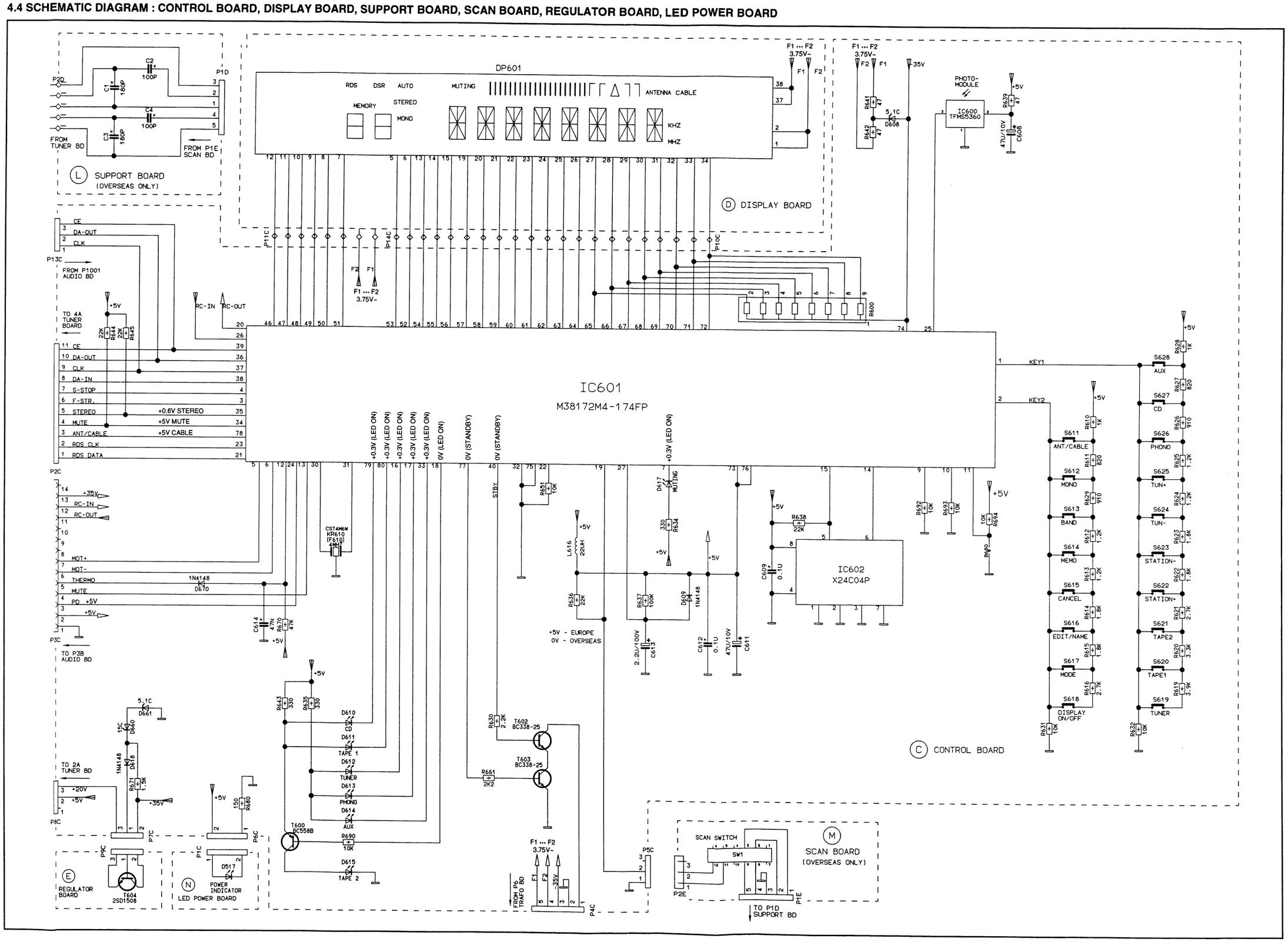



AM
FM
IC1
IC2
IC3
IC4
IC5
F1
F2
F4
F6
F7
F9
F11
S9353-792.00(06)48

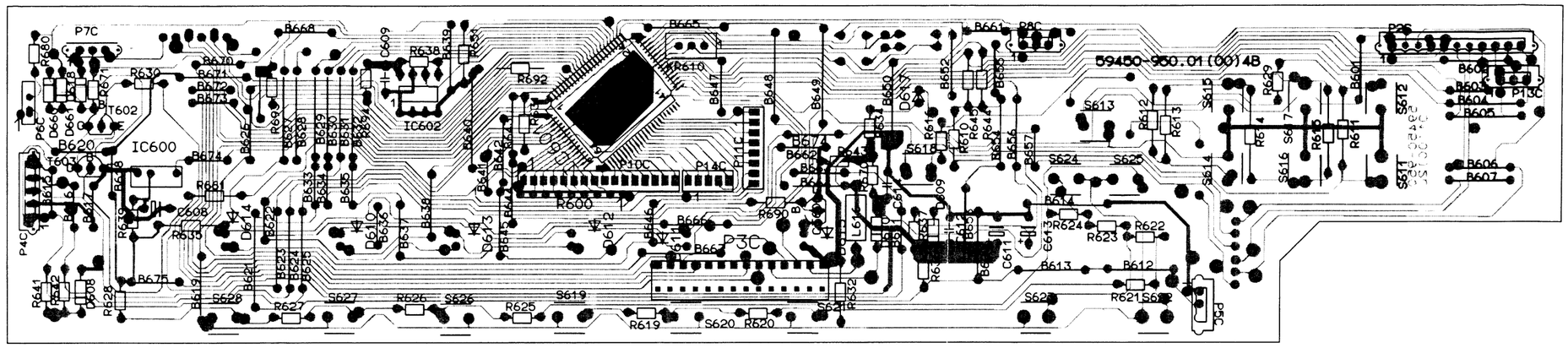
4.3 SCHEMATIC DIAGRAM TUNER BOARD - PART 2



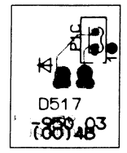
4.4 SCHEMATIC DIAGRAM : CONTROL BOARD, DISPLAY BOARD, SUPPORT BOARD, SCAN BOARD, REGULATOR BOARD, LED POWER BOARD



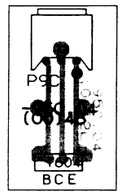
4.5.1 CONTROL PCB
(component side)



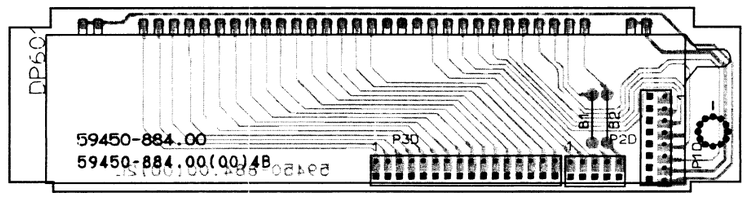
4.5.2 LED POWER PCB
(component side)



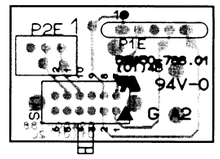
4.5.3 REGULATOR PCB
(component side)



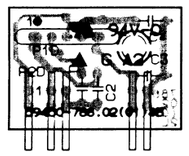
4.5.4 DISPLAY PCB
(component side)



4.5.5 SCAN PCB
(component side)

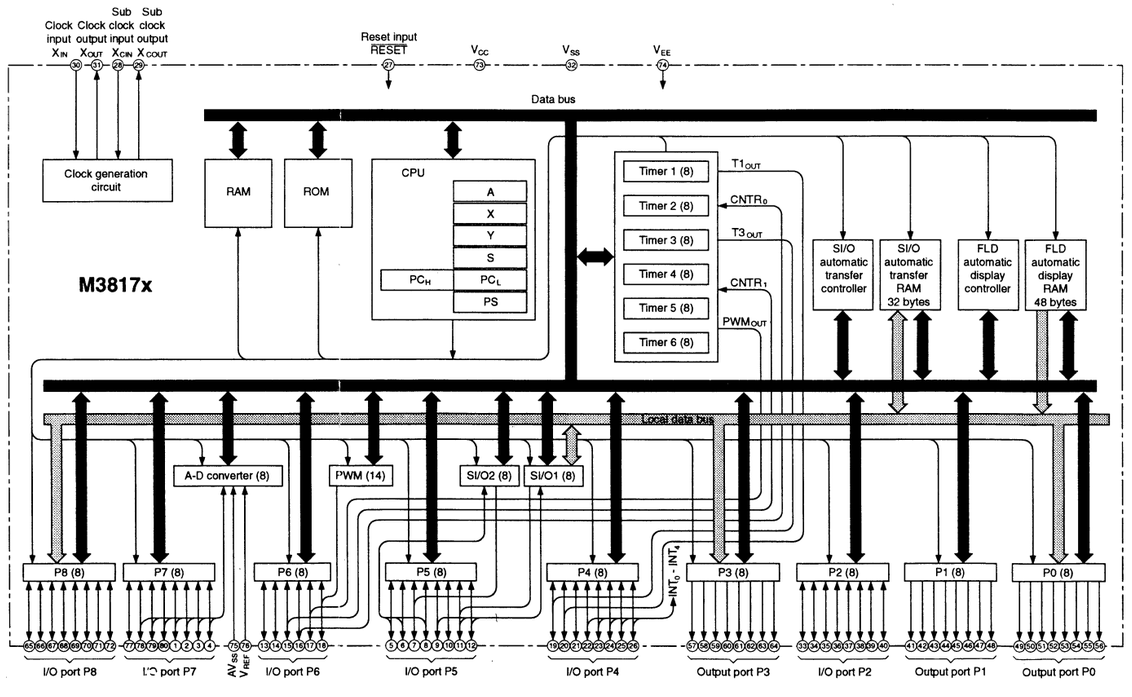


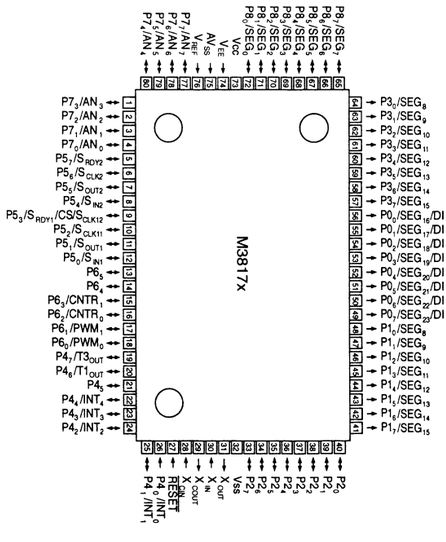
4.5.6 SUPPORT PCB
(component side)

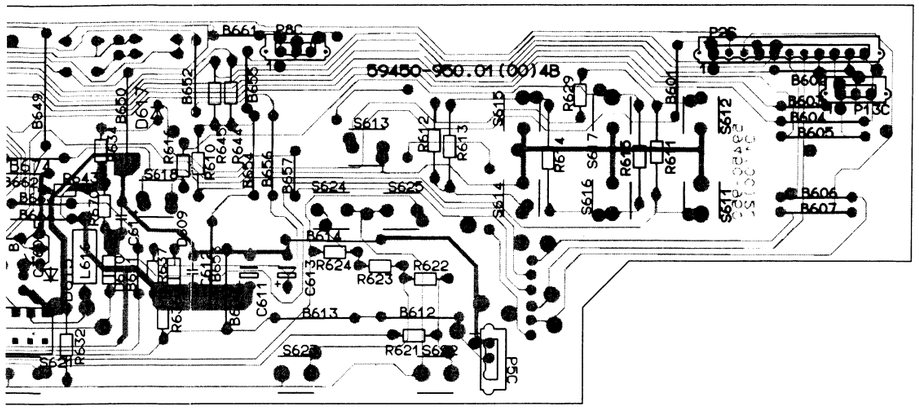


PIN DESCRIPTION M3817x

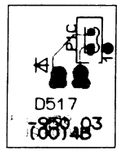
Pin		Name	Function	Alternate Function
73, 32	V_{CC}, V_{SS}	Power supply	Power supply inputs 4.0 to 5.5V to V_{CC}, and 0V to V_{SS}.	
74	V_{EE}	Pull-down power input	Applies voltage supplied to pull-down resistors of ports P0, P1, P2 and P3.	
76	V_{REF}	Analog reference voltage	Reference voltage input pin for A-D converter.	
75	AV_{SS}	Analog power voltage	GND input pin for A-D converter. Keep at the same potential as V_{SS}.	
27	$\overline{RESET}$	Reset input	To reset the microcomputer, this pin should be kept at an "L" level for more than 2μs under high-speed operating conditions. In low-speed operation start mode, internal reset is not released until the X_{CIN} - X_{COUT} clock has had time to stabilize.	
30	X_{IN}	Clock input	Input and output signals for the internal clock generation circuit. It consist of internal feedback amplifier. Connect a ceramic resonator or quartz crystal between the X_{IN} and X_{OUT} pins to set the oscillation frequency. If an external clock is used, connect the clock source to the X_{IN} pin and leave the X_{OUT} pin open. This clock is used as system clock.	
31	X_{OUT}	Clock output		
28	X_{CIN}	Sub clock input	Input and output signals for the internal sub clock generation circuit. It consist of internal amplifier without feedback. Connect a ceramic resonator or quartz crystal and external feedback resistor between the X_{CIN} and X_{COUT} pins. If an external clock is used, connect the clock source to the X_{CIN} pin and leave the X_{COUT} pin open. This clock can also be used as the system clock.	
29	X_{COUT}	Sub clock output		
56 - 49	$P0_0/SEG_{16}/DIG_0$ - $P0_7/SEG_{23}/DIG_7$	Output port P0	An 8-bit output port. The output structure is high-breakdown-voltage P-channel open drain with internal pull-down resistors connected between the output and the V_{EE} pin. Are "L" at reset.	FLD automatic display pins
48 - 41	$P1_0/DIG_8$ - $P1_7/DIG_{15}$	Output port P1	An 8-bit output port with the same function as port P0.	FLD automatic display pins
40 - 33	$P2_0$ - $P2_7$	I/O port P2	An 8-bit CMOS I/O port. An I/O direction register allows each pin to be individually programmed as either input or output. At reset this port is set to input mode. The input levels are TTL compatible.	
64 - 57	$P3_0/SEG_8$ - $P3_7/SEG_{15}$	Output port P3	An 8-bit output port with the same function as port P0.	FLD automatic display pins
26	$P4_0/INT_0$	Input port $P4_0$	A 1-bit CMOS input pin.	External interrupt input pin
25 - 22	$P4_1/INT_1$ - $P4_4/INT_4$	I/O port P4	A 7-bit CMOS I/O port with the same function as port P2, with CMOS compatible input levels.	External interrupt input pins
21	$P4_5$			
20, 19	$P4_6/T1_{OUT}$, $P4_7/T3_{OUT}$			Timer output pins
12 - 9	$P5_0/S_{IN1}$, $P5_1/S_{OUT1}$, $P5_2/S_{CLK11}$, $P5_3/S_{RDY1}$/ $\overline{CS}/S_{CLK12}$	I/O port P5	An 8-bit I/O port with the same function as port P2. The output structure of this port is N-channel open drain, and the input levels are CMOS compatible. Keep the input voltage of this port between 0V and V_{CC}.	Serial I/O1 I/O pins
8 - 5	$P5_4/S_{IN2}$, $P5_5/S_{OUT2}$, $P5_6/S_{CLK2}$, $P5_7/S_{RDY2}$			Serial I/O2 I/O pins
18	$P6_0/PWM_0$	I/O port P6	A 6-bit CMOS I/O port with the same function as port P2, with CMOS compatible input levels.	14-bit PWM output pin
17	$P6_1/PWM_1$			8-bit PWM output pin
16, 15	$P6_2/CNTR_0$, $P6_3/CNTR_1$			Event counter input pins
14, 13	$P6_4$, $P6_5$			
4 - 1, 80 - 77	$P7_0/AN_0$ - $P7_7/AN_7$	I/O port P7	An 8-bit CMOS I/O port with the same function as port P2, with CMOS compatible input levels.	A-D converter input pins
72 - 65	$P8_0/SEG_0$ - $P8_7/SEG_7$	I/O port P8	An 8-bit I/O port with the same function as port P2. The output structure of this port is P-channel open drain, and the input levels are CMOS compatible. Please note that this port does not have internal pull-down resistors.	FLD automatic display pins



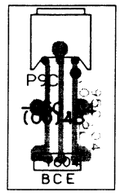




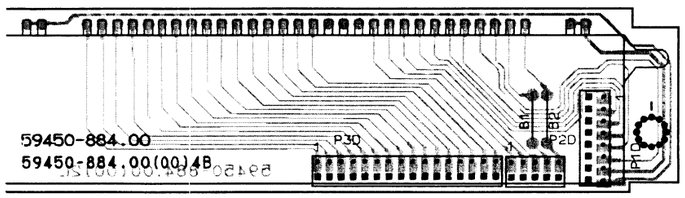
4.5.2 LED POWER PCB
(component side)



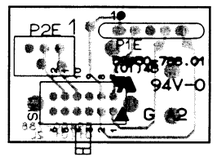
4.5.3 REGULATOR PCB
(component side)



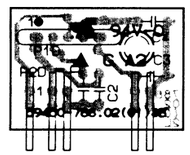
DISPLAY PCB
(component side)

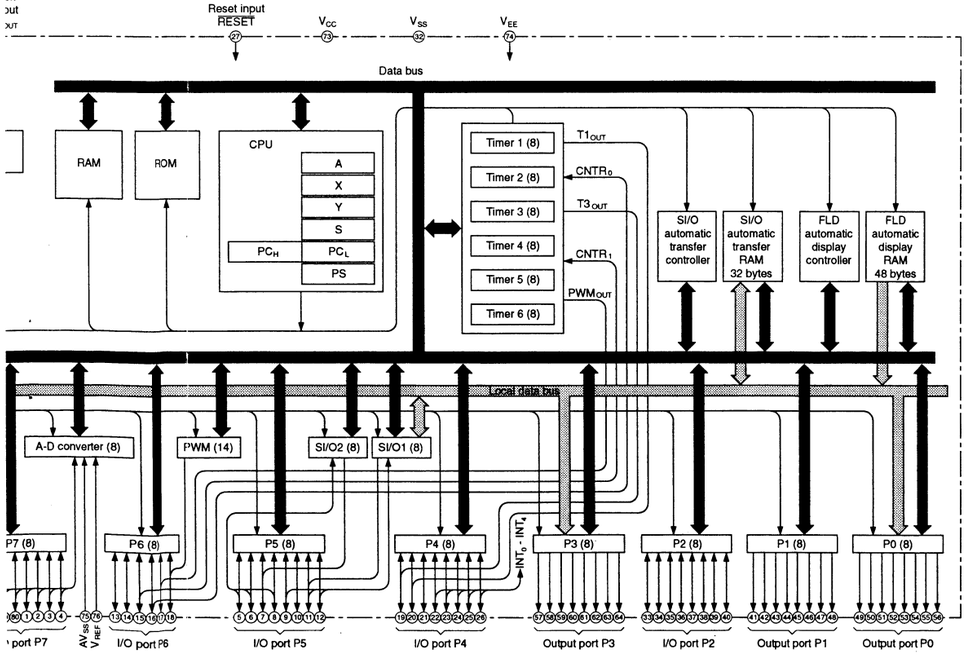


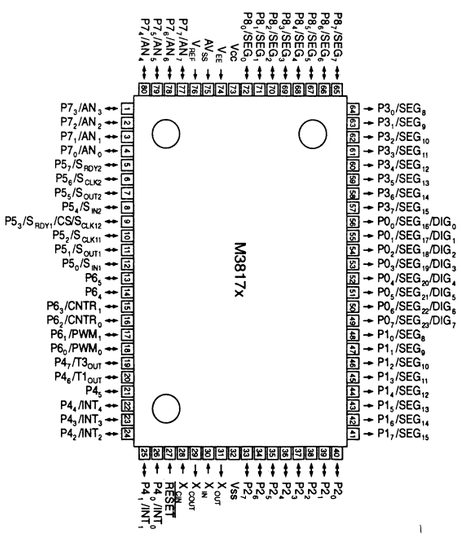
4.5.5 SCAN PCB
(component side)



4.5.6 SUPPORT PCB
(component side)





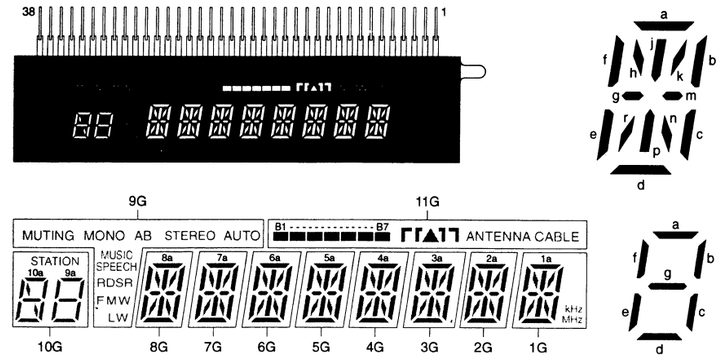


4.6 DISPLAY

PIN CONNECTION

PIN NO.	38	37	36	35	34	33	32	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1
CONNECTION	F2	F2	NP	NP	P6	P5	P4	P3	P2	P1	P0	P9	P8	P7	P6	P5	P4	P3	P2	P1	NP	NC	NC	NC	G11	G10	G9	G8	G7	G6	G5	G4	G3	G2	G1	NP	P1	F1	F1

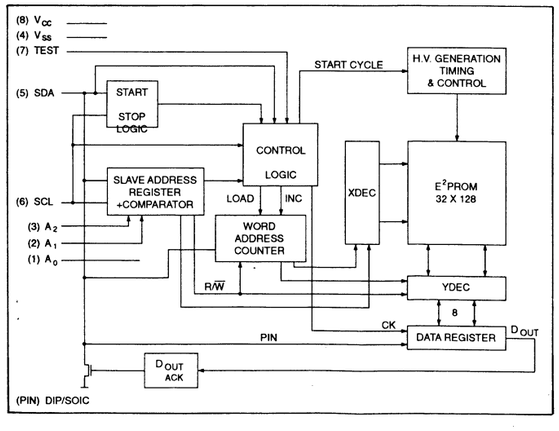
F1, F2 --- Filament NP --- No pin NC --- No connection 1G~11G --- Grid



ANODE CONNECTION

	11G	10G	9G	8G	7G	6G	5G	4G	3G	2G	1G
P1	CABLE	9a	MUSIC	8a	7a	6a	5a	4a	3a	2a	1a
P2	ANTENNA	9b	SPEECH	8b	7b	6b	5b	4b	3b	2b	1b
P3	(Right) ⌝	9f	F	8f	7f	6f	5f	4f	3f	2f	1f
P4	(Right) ⌝	9g	M	8k	7k	6k	5k	4k	3k	2k	1k
P5	▲	9c	W	8j	7j	6j	5j	4j	3j	2j	1j
P6	⌜ (Left)	9e	LW	8h	7h	6h	5h	4h	3h	2h	1h
P7	⌜ (Left)	9d	R (Left)	8m	7m	6m	5m	4m	3m	2m	1m
P8	B7	10a	DS	8g	7g	6g	5g	4g	3g	2g	1g
P9	B6	10b	R (Right)	8n	7n	6n	5n	4n	3n	2n	1n
P10	B5	10f	-	8p	7p	6p	5p	4p	3p	2p	1p
P11	B4	10g	MUTING	8r	7r	6r	5r	4r	3r	2r	1r
P12	B3	10c	MONO	8c	7c	6c	5c	4c	3c	2c	1c
P13	B2	10e	STEREO	8e	7e	6e	5e	4e	3e	2e	1e
P14	B1	10d	AUTO	8d	7d	6d	5d	4d	3d	2d	1d
P15	-	STATION	A	-	-	-	-	-		-	kHz
P16	-		B	-	-	-	-	-	-	-	MHz

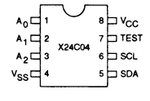
FUNCTIONAL DIAGRAM



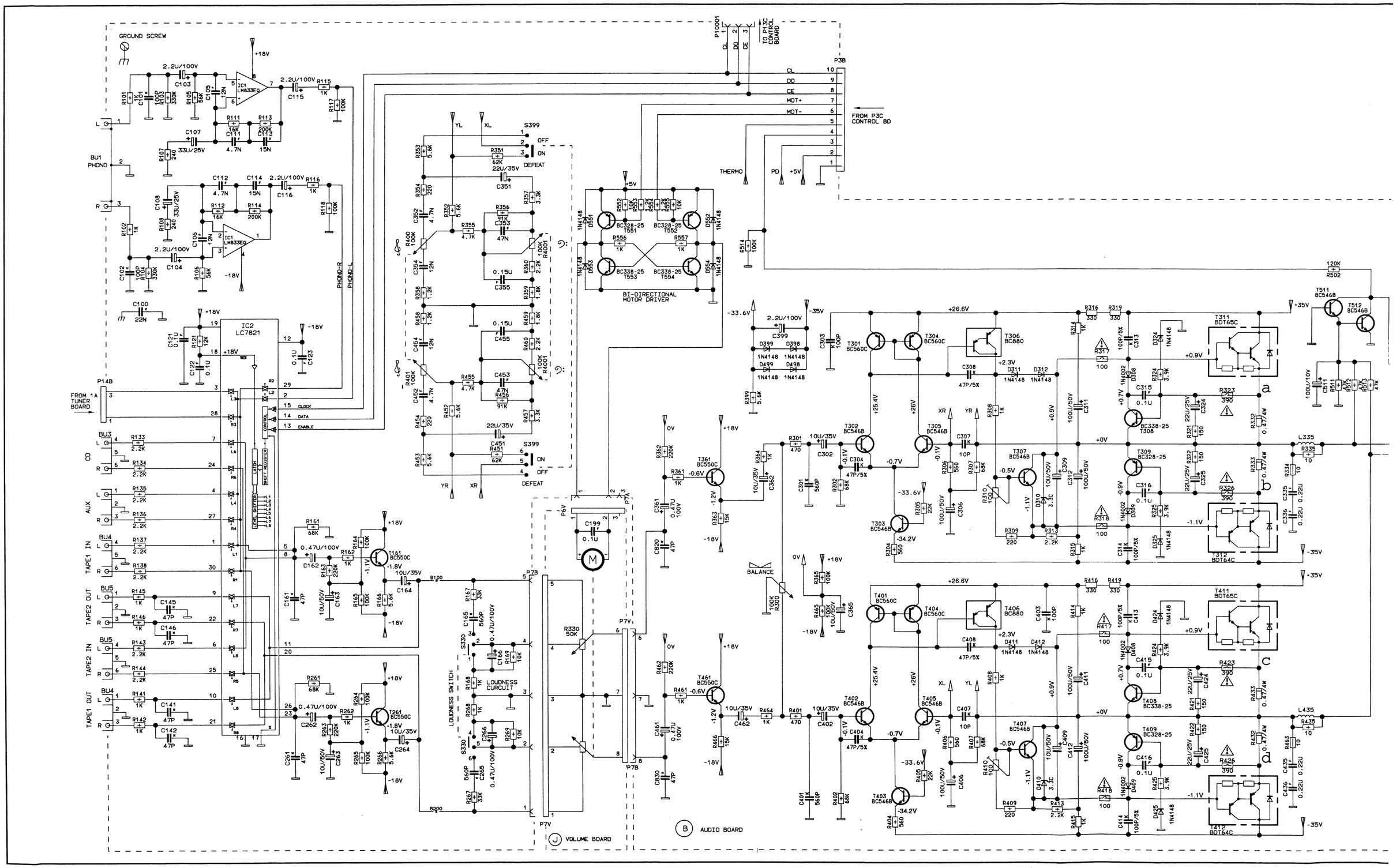
PIN NAMES

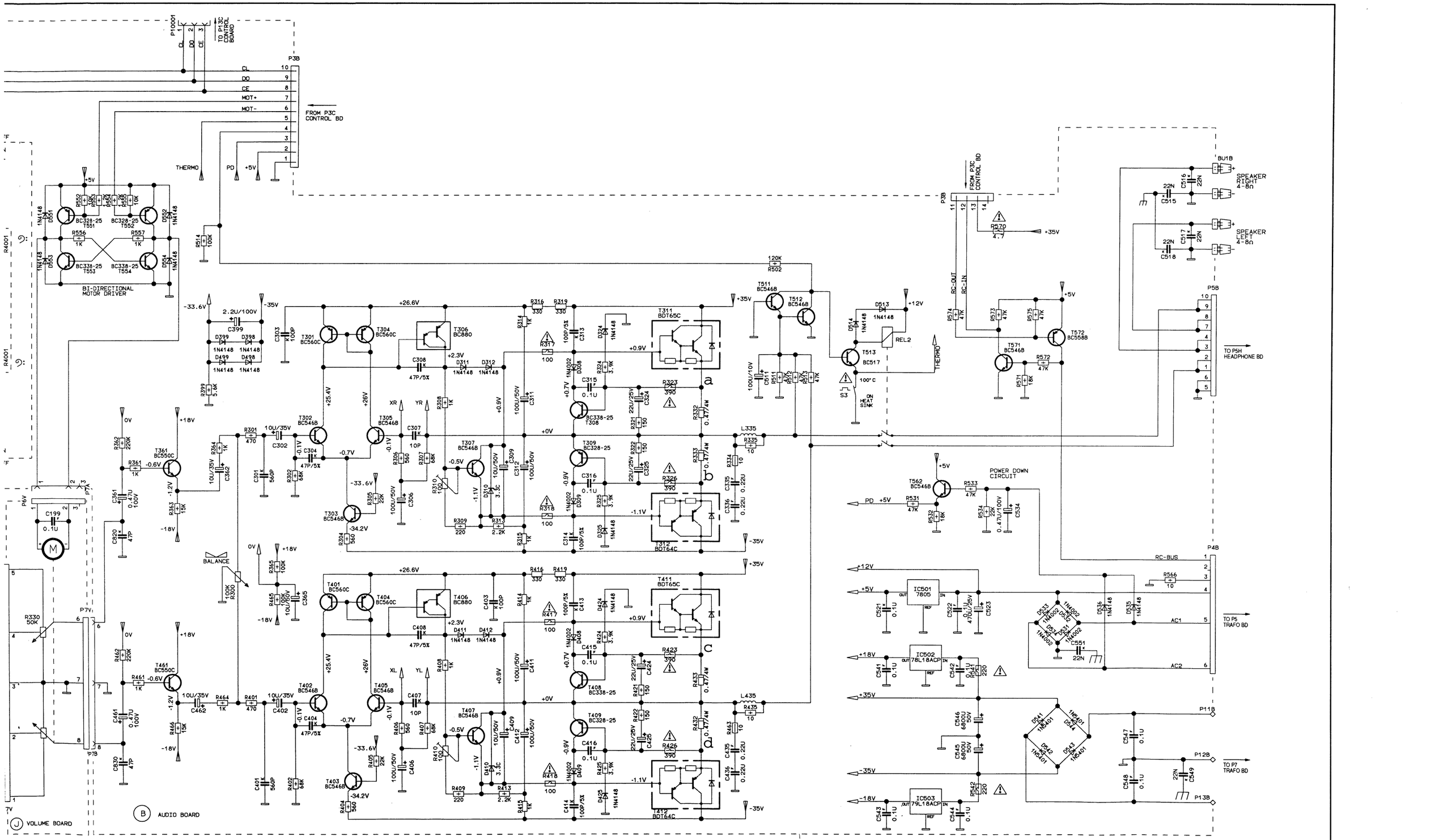
A_0 ÐA$_2$	Address Inputs
SDA	Serial Data
SCL	Serial Clock
TEST	Hold at VSS
V_{SS}	Ground
V_{CC}	Supply Voltage
NC	No Connect

DIP/SOIC

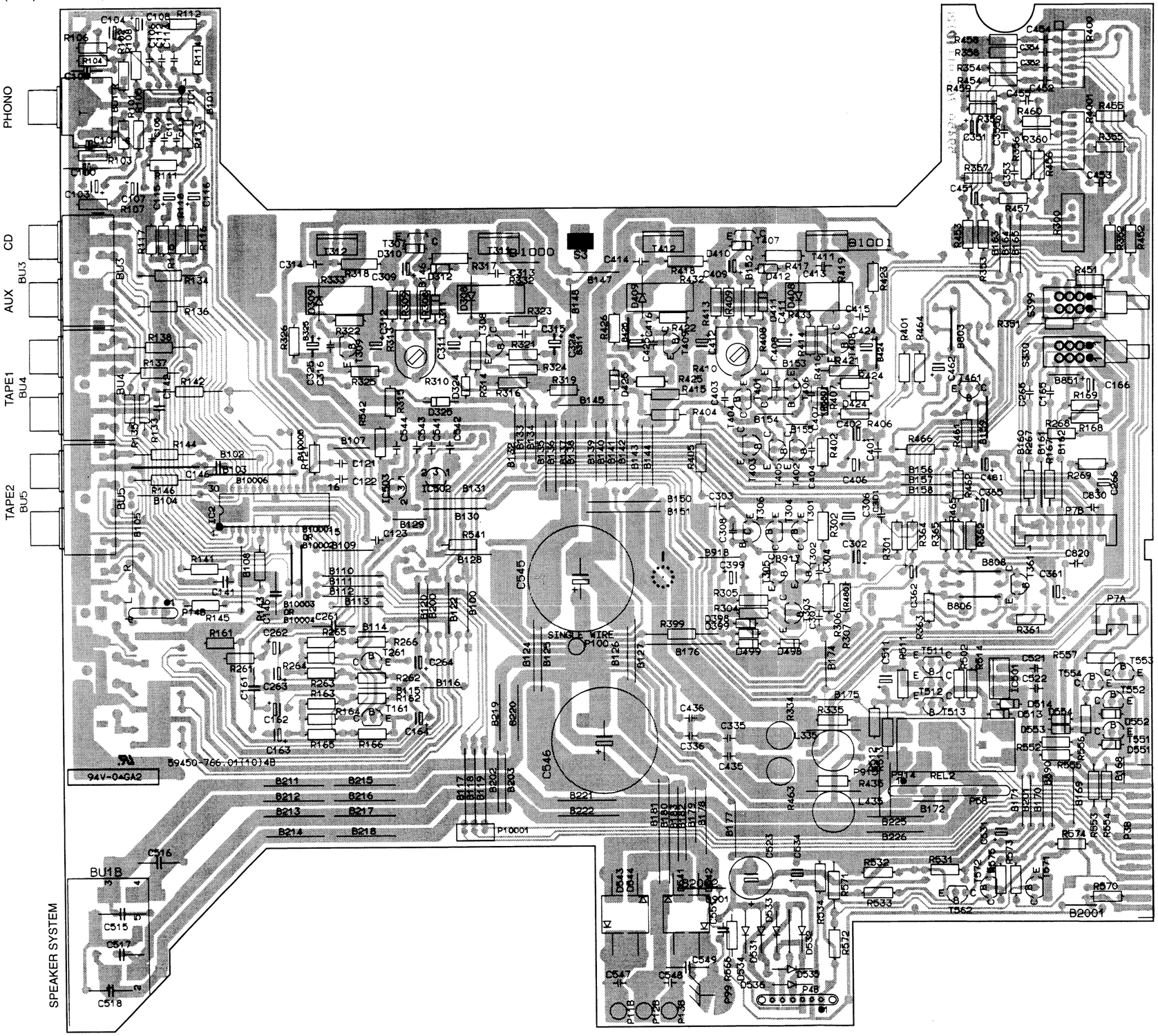


4.7 SCHEMATIC DIAGRAM : AUDIO BOARD, VOLUME BOARD

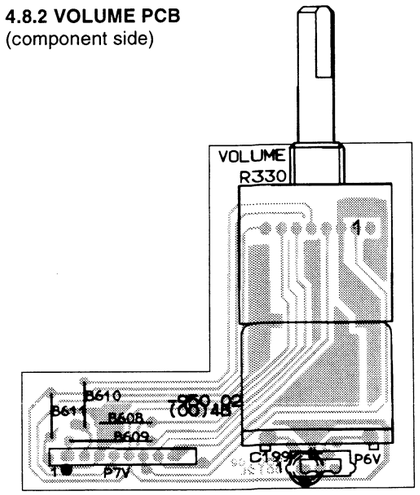



P10001
CL
DO
CE
TO P13C CONTROL BOARD
P3B
FROM P3C CONTROL BD
THERMO
PD
+5V
BI-DIRECTIONAL MOTOR DRIVER
BC328-25 T551
BC328-25 T552
BC338-25 T553
BC338-25 T554
-33.6V
-35V
+26.6V
+35V
+12V
+25.4V
+26V
+0.9V
+0V
-0.7V
-1.1V
-34.2V
+2.3V
+0.7V
-0.9V
-0.5V
+18V
0V
-18V
-0.6V
-1.2V
XR
YR
XL
YL
BALANCE
100K R300
T301 BC560C
T304 BC560C
T306 BC880
T311 BDT65C
T312 BDT64C
T302 BC546B
T305 BC546B
T307 BC546B
T303 BC546B
T308 BC338-25
T309 BC328-25
T361 BC550C
T401 BC560C
T404 BC560C
T406 BC880
T411 BDT65C
T412 BDT64C
T402 BC546B
T405 BC546B
T407 BC546B
T403 BC546B
T408 BC338-25
T409 BC328-25
T461 BC550C
T511 BC546B
T512 BC546B
T513 BC517
T562 BC546B
T571 BC546B
T572 BC558B
REL2
100° C
HEAT SINK
S3
FROM P3C CONTROL BD
RC-OUT
RC-IN
+35V
POWER DOWN CIRCUIT
SPEAKER RIGHT 4-8Ω
SPEAKER LEFT 4-8Ω
TO P5H HEADPHONE BD
TO P5 TRAFO BD
TO P7 TRAFO BD
RC-BUS
IC501 7805
IC502 78L18ACP
IC503 79L18ACP
AC1
AC2
P4B
P5B
P11B
P12B
P13B
P6V
P7V
P7A
P7B
M
VOLUME BOARD
AUDIO BOARD
a
b
c
d

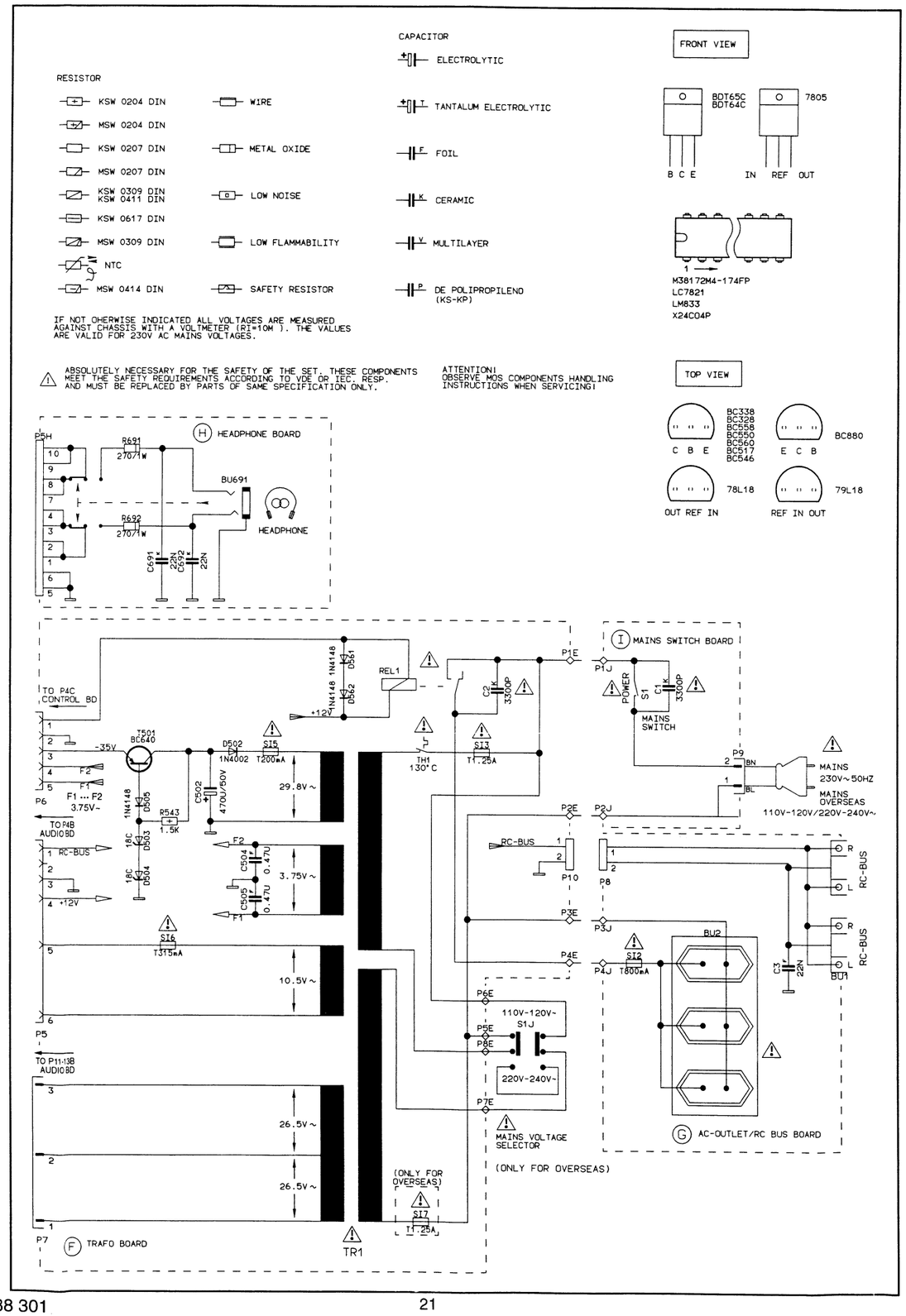
4.8.1 AUDIO PCB
(component side)



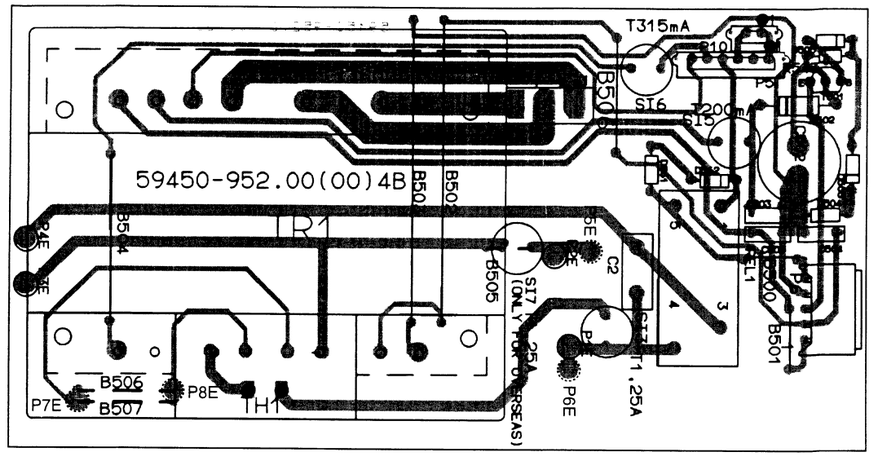
4.8.2 VOLUME PCB
(component side)



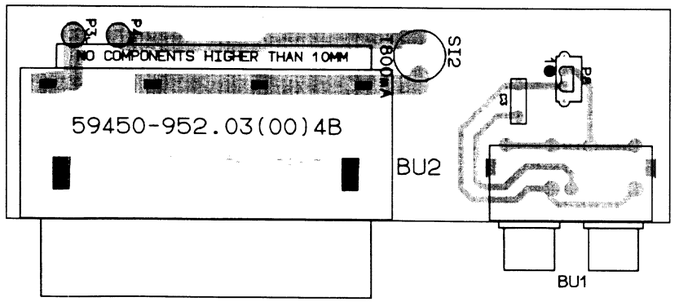
4.9 SCHEMATIC DIAGRAM : HEADPHONE BOARD, TRAFO BOARD, MAINS SWITCH BOARD, AC-OUTLET / RC BUS BOARD, MAINS VOLTAGE SELECTOR



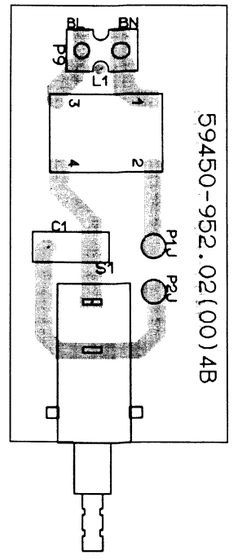
4.10.1 TRAFO PCB
(component side)



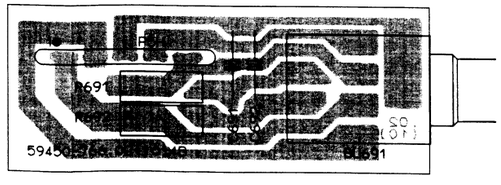
4.10.2 AC OUTLET / RC BUS PCB
(component side)



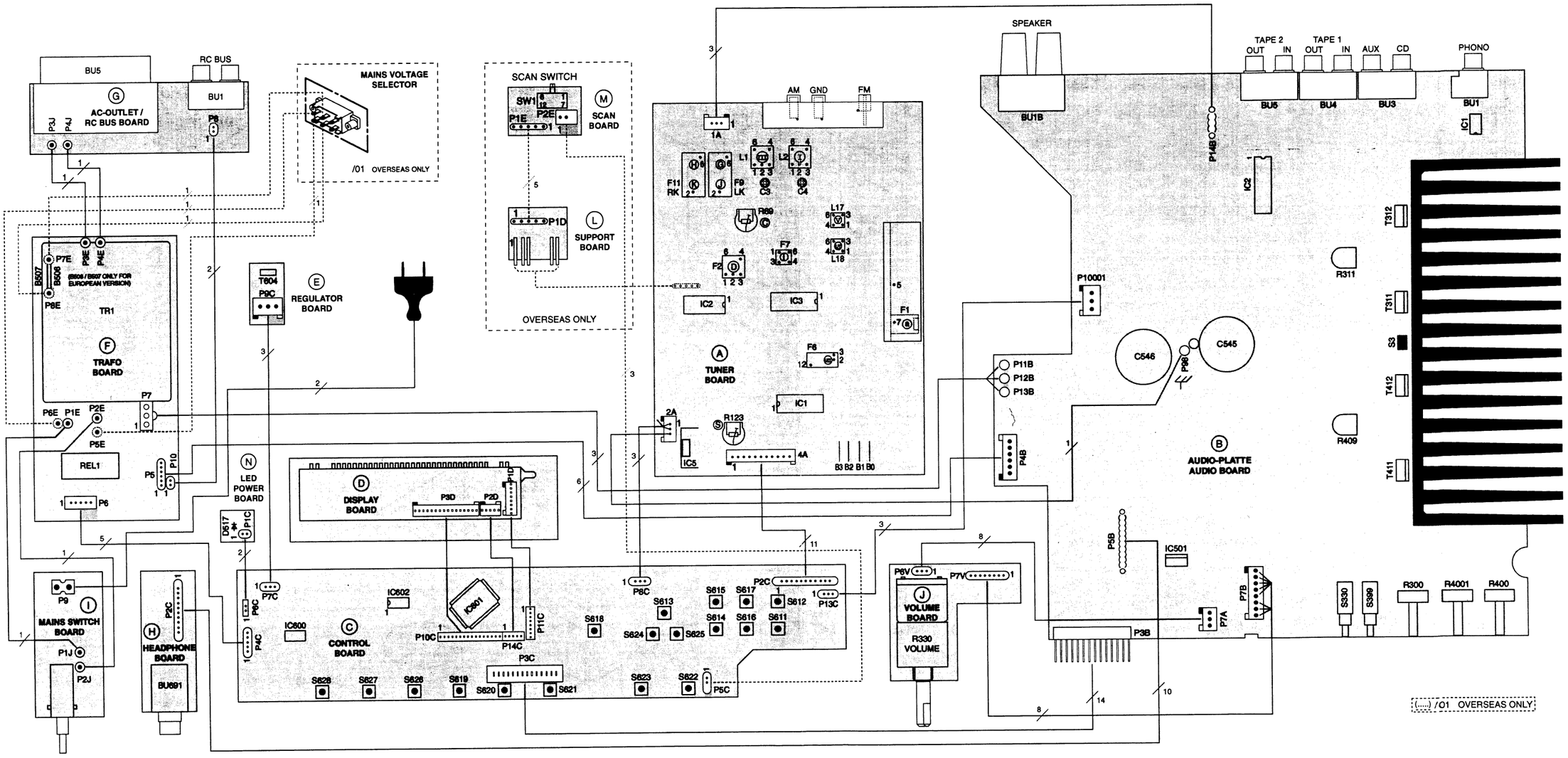
4.10.3 MAINS SWITCH PCB
(component side)



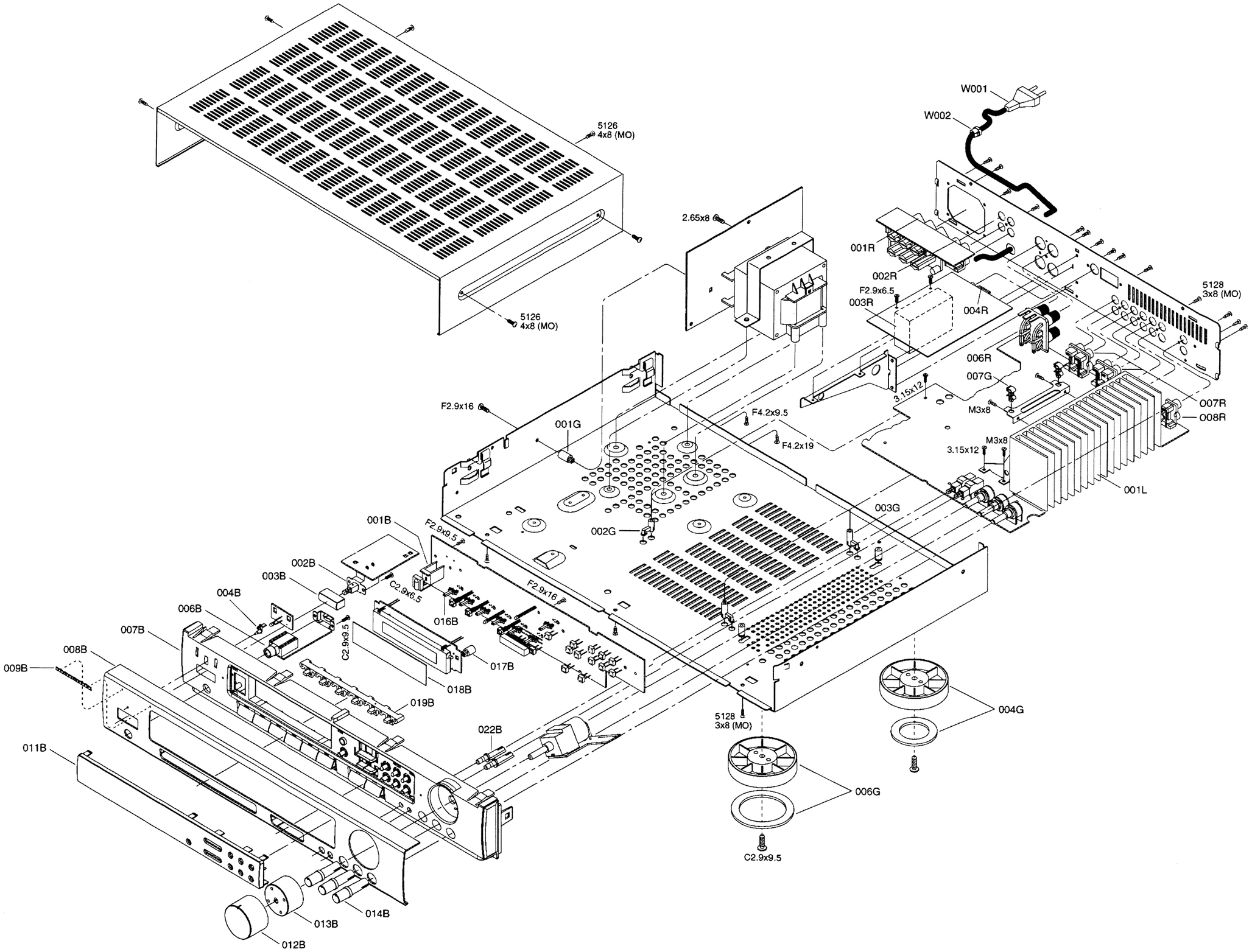
4.10.4 HEADPHONE PCB
(component side)



5. WIRING DIAGRAM



6. EXPLODED VIEW AND PARTS LIST



(VERS. :VERSION, U:U.S.A, F:JAPAN, K:FAR EAST, **:EUROPE)

POS. NO	VERS. COLOR	PART NO. (PCS)	DESCRIPTION	PART NO. (MJI)
⚠ 002B		4822 276 13835	MAINS SWITCH	QP27613835
003B		4822 410 63889	MAINS BUTTON	QP41063889
006B		4822 267 31835	HEADPHONE SOCKET	QP26731835
007B		4822 459 04452	FRONT PANEL (PLASTIC)	QP45904452
008B		4822 459 04453	FRONT (ALU)	QP45904453
009B		4822 454 11825	MARANZ BADGE	274H251020
011B		4822 381 11833	LENS DISPLAY	QP38111833
012B		4822 410 10967	VOLUME KNOB (ALU)	QP41010967
013B		4822 410 10968	VOLUME KNOB (PLASTIC)	QP41010968
014B		4822 410 10969	KNOB (TONE CONTROL)	QP41010969
022B		4822 410 10971	BUTTON	QP41010971
004G		4822 462 42048	FOOT (REAR SIDE)	183J057110
006G		4822 462 42045	FOOT (FRONT SIDE)	183J057010
⚠ 001R		4822 267 41233	AC SOCKET	QP26741233
002R		4822 265 10767	CINCH SOCKET (QUAD)	QP26510767
003R		4822 210 10531	FRONTEND MODEL FE415-G11	QP21010531
004R		4822 267 10296	ANTENNA SOCKET	QP26710296
006R		4822 267 41185	SPEAKER TERMINAL	QP26741185
007R		4822 267 41153	CINCH SOCKET (QUAD)	QP26741153
008R		4822 267 31834	CINCH SOCKET (TWIN)	QP26731834
⚠ W001		4822 321 22917	MAINS CABLE GWN9.17 WF	QP32122917
⚠ XX01		4822 265 10777	MAINS CABLE BASE	QP26510777
⚠ XX02		4822 282 40297	THERMAL SWITCH TRANSFORMER	QP28240297
⚠ XX03		4822 282 40298	THERMAL SWITCH 100 DEGREE C	QP28240298
SX01	/01	4822 276 13635	SWITCH (SCAN) ALPS /01	QP27613635
⚠ SX02	/01	4822 277 21807	SLIDE SWITCH /01	QP27721807
⚠ TR1		4822 146 10721	MAINS TRANSFORMER	QP14610721
Z001		4822 218 10595	REMOTE CONTROL	QP21810595
T001		4822 736 14938	OPERATING INSTRUCTIONS	QP73614938

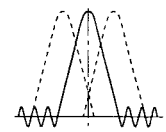
7. ALIGNMENT PROCEDURES

7.1 FM Alignment Procedures

(Function switch at "FM" position)

Note: The frontend is a completely preadjusted module. Only the IF-filter must be adjusted to the IF amplifier.
The values of the tuning voltages are:
87.5MHz = typ. 1.6V min 1.3V
108MHz = typ. 8.0V max 9V

- **FM IF Alignment**

Step	Signal Source Connection	Signal Frequency	Indicator Connection	Adjust
1	Connect an FM sweep generator to FM aerial socket. U_{RF} = approx. 100µV / 75Ω	98MHz	Connect an oscilloscope to measuring point ⟨B⟩	With IF filter F1 a adjust for maximum level and symmetrical position. 

- **FM Demodulator Alignment**

Step	Signal Source Connection	Signal Frequency	Indicator Connection	Adjust
1	Connect an FM generator to FM aerial socket. U_{RF} = 100µV / 75Ω $f_{mod.}$ = 1kHz, Δf = ±40kHz	98MHz	Connect a distortion analyzer to measuring point ⟨R⟩ and ⟨L⟩	With filter F7 i adjust for minimum distortion. (typ. 0.12%, max. 0.2%)

- **FM Field Strength IND - Search Stop Alignment**

Step	Signal Source Connection	Signal Frequency	Indicator Connection	Adjust
1	Connect an FM generator to FM aerial socket. U_{RF} = 100µV / 75Ω	98MHz	DC-VM to measuring point ⟨G⟩	With R123 S set to 1.2V +0.05V.

- **Multiplex Alignment**

Step	Signal Source Connection	Signal Frequency	Indicator Connection	Adjust
1	Connect a stereo encoder to FM aerial socket.	106MHz $L_{mod.}$ = 1kHz	Connect AC-VM to measuring point ⟨R⟩	With R69 C adjust for maximum and symmetrical crosstalk attenuation.
2		106MHz $R_{mod.}$ = 1kHz	Connect AC-VM to measuring point ⟨L⟩	
3	Connect an FM generator to FM aerial socket.	98MHz $f_{mod.}$ = 38kHz	Connect AC-VM to measuring point ⟨R⟩ and ⟨L⟩	With F9 J, F11 K adjust for minimum level.
4		98MHz $f_{mod.}$ = 19kHz		With F9 G, F11 H adjust for minimum level.

- **Adjacent Channel Filter Alignment**

Step	Signal Source Connection	Signal Frequency	Indicator Connection	Adjust
1	Connect an AF generator to the input of F2 (Pin 2). U_{AF} = approx. 100mV	114 kHz	Connect AC-VM to the output of F2 (Pin 4).	With F2 D adjust for minimum level.

7.2 AM Alignment Procedures

(Function switch at "AM" position)

- **MW/LW Oscillator Alignment**

Step	Signal Source Connection	Signal Frequency	Indicator Connection	Adjust
1		531kHz (MW)	Connect DC-VM to measuring point (E)	With L18 (VI) set the tuning voltage to 1.1V.
2		153kHz (LW)		With L17 (V) set the tuning voltage to 1.8V.

- **MW RF IF Alignment**

Step	Signal Source Connection	Signal Frequency	Indicator Connection	Adjust
1	Feed in an AM generator signal via a frame aerial. U_{RF} as low as possible m = 30%, $f_{mod.}$ = 1kHz	1449kHz	Connect AC-VM to measuring point (R) and (L)	With C3 (IV) and the IF Filter F6 (VII) set U_{AF} to maximum level.
2		558kHz		With L1 (III) set U_{AF} to maximum level.
3	Repeat the adjustment reciprocally, end with 1449kHz.			

- **LW RF IF Alignment**

Step	Signal Source Connection	Signal Frequency	Indicator Connection	Adjust
1	Feed in an AM generator signal via a frame aerial. U_{RF} as low as possible m = 30%, $f_{mod.}$ = 1kHz	261kHz	Connect AC-VM to measuring point (R) and (L)	With C4 (II) set U_{AF} to maximum level.
2		162kHz		With L2 (I) set U_{AF} to maximum level.
3	Repeat the adjustment reciprocally, end with 261kHz.			

7.3 Amplifier Alignment Procedures

- **Quiescent Current Alignment**

Step	Signal Source Connection	Volume	Indicator Connection	Adjust
1	No input signal. Turn on the set for at least 2 minutes.	min.	Connect DC-VM to measuring point left channel a···b	With R310 set the voltage to 6mV ±0.3mV.
2			Connect DC-VM to measuring point right channel c···d	With R410 set the voltage to 6mV ±0.3mV.

- **FM IF offset**

The ceramic resonators have different intermediate frequencies as a result of tolerances. Dependent on the IF, a jumper has to be closed or a jumper has to be opened. B0 – B3 (see table).
The resonators have been provided with a colour code.

When replacing one of the ceramic resonators, take care that the colours codes of all resonators are the same.

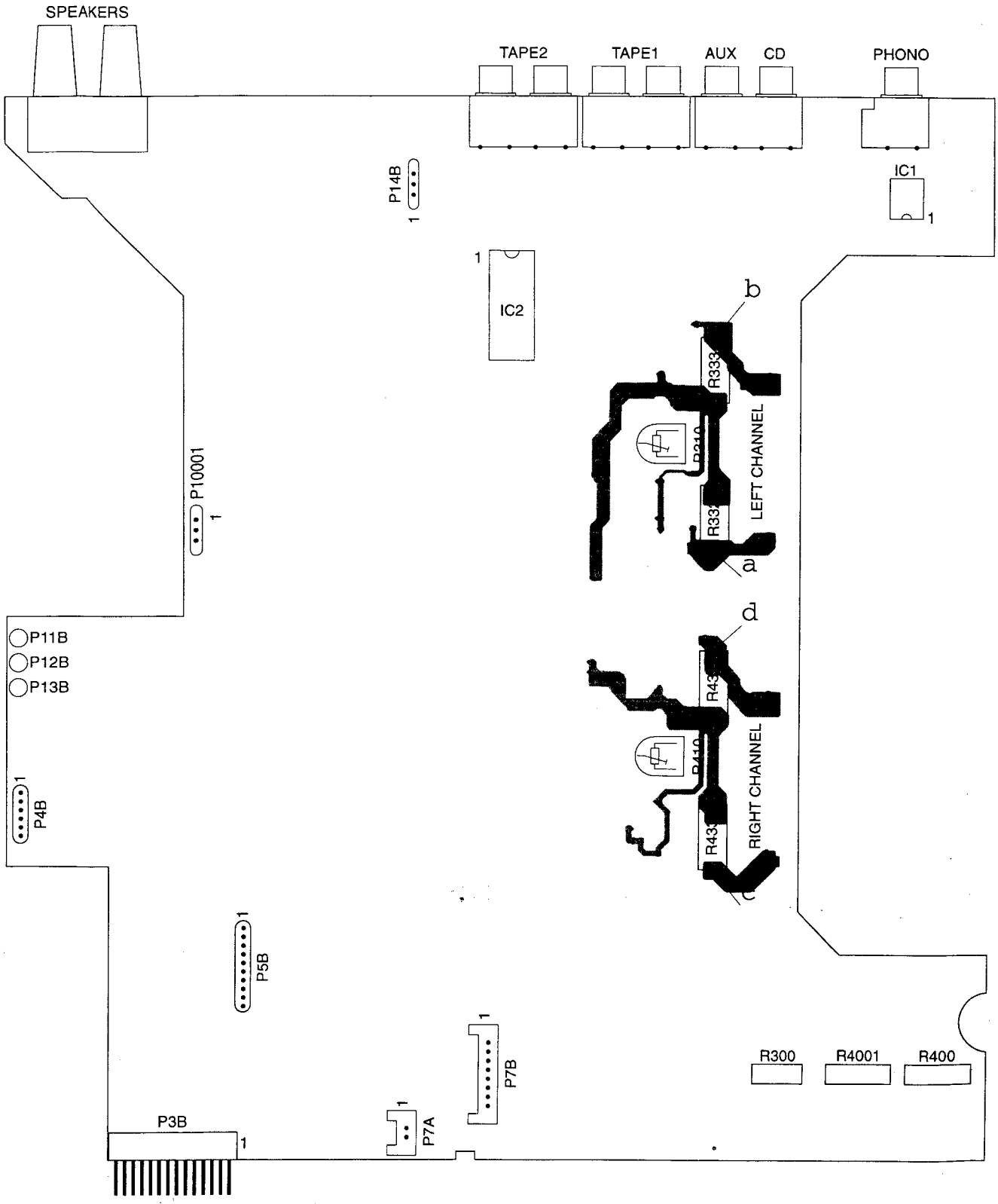
⬡△ Measuring points

◯ Trimming point

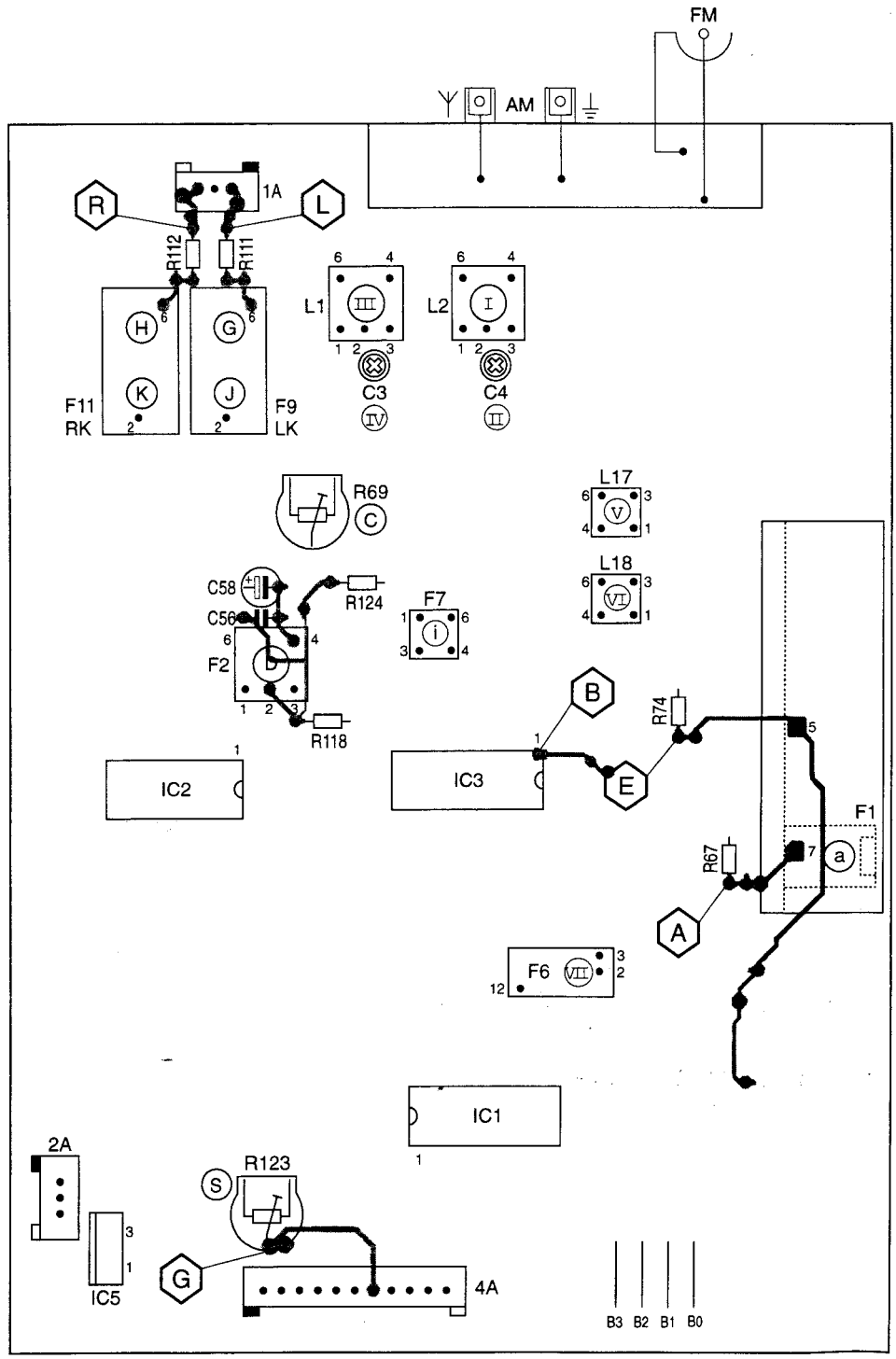
	Jumper				
IF (MHz)	B 3	B 2	B 1	B 0	Filter color
10.6500	0	1	0	0	Black
10.6750	0	1	1	0	Blue
10.7000	1	0	0	0	Red
10.7250	1	0	1	0	Orange
10.7500	1	1	0	0	White

0 = jumper open 1 = jumper closed

7.4 Amplifier Alignment Points



7.5 Tuner Alignment Points



8. ELECTRICAL PARTS LIST

(VERS. :VERSION, U:U.S.A, F:JAPAN, K:FAR EAST, **:EUROPE)

POS. NO	VERS. COLOR	PART NO. (PCS)	DESCRIPTION	PART NO. (MJI)
			CAPACITORS	
⚠ C1		4822 126 11805	SI-KERKO.A 3300pF 20%	QP12611805
⚠ C2		4822 126 11805	SI-KERKO.A 3300pF 20%	QP12611805
C3		4822 125 60222	TR.53 4.5-20pF 5	QP12560222
C4		4822 125 60223	TR.55 7.5-45pF 5	QP12560223
C545		4822 124 42455	ELKO 6800µF 50V	QP12442455
C546		4822 124 42455	ELKO 6800µF 50V	QP12442455
			SEMICONDUCTORS	
D6		5322 130 34052	DIODE 1N4151	QQ13034052
D7		5322 130 34052	DIODE 1N4151	QQ13034052
D9		4822 130 82789	DIODE SVC321 SP-A/B/C/D	QP13082789
D14				
I		5322 130 34052	DIODE 1N4151	QQ13034052
D17				
D19		5322 130 34052	DIODE 1N4151	QQ13034052
D23		4822 130 82789	DIODE SVC321 SP-A/B/C/D	QP13082789
D24		5322 130 34052	DIODE 1N4151	QQ13034052
D25		5322 130 34052	DIODE 1N4151	QQ13034052
D27				
I		5322 130 34052	DIODE 1N4151	QQ13034052
D29				
D43		5322 130 34052	DIODE 1N4151	QQ13034052
D308		5322 130 30684	DIODE 1N4002-GA	QQ13030684
D309		5322 130 30684	DIODE 1N4002-GA	QQ13030684
D310		4822 130 81781	Z DIODE 3.3V B 0.5W	QP13081781
D311		4822 130 30621	DIODE 1N4148	QP13030621
D312		4822 130 30621	DIODE 1N4148	QP13030621
D324		4822 130 30621	DIODE 1N4148	QP13030621
D325		4822 130 30621	DIODE 1N4148	QP13030621
D398		4822 130 30621	DIODE 1N4148	QP13030621
D399		4822 130 30621	DIODE 1N4148	QP13030621
D408		5322 130 30684	DIODE 1N4002-GA	QQ13030684
D409		5322 130 30684	DIODE 1N4002-GA	QQ13030684
D410		4822 130 81781	Z DIODE 3.3V B 0.5W	QP13081781
D411		4822 130 30621	DIODE 1N4148	QP13030621
D412		4822 130 30621	DIODE 1N4148	QP13030621
D424		4822 130 30621	DIODE 1N4148	QP13030621
D425		4822 130 30621	DIODE 1N4148	QP13030621
D498		4822 130 30621	DIODE 1N4148	QP13030621
D499		4822 130 30621	DIODE 1N4148	QP13030621
D502		5322 130 30684	DIODE 1N4002-GA	QQ13030684
D503		4822 130 83968	Z-DIODE 15V C 0.5W	QP13083968
D504		4822 130 31024	Z DIODE 18V C 0.5W	QP13031024
D505		4822 130 30621	DIODE 1N4148	QP13030621
D513		4822 130 30621	DIODE 1N4148	QP13030621
D514		4822 130 30621	DIODE 1N4148	QP13030621
D517		4822 130 82743	LED TLHR4400TFK	QP13082743
⚠ D531				
I		5322 130 30684	DIODE 1N4002-GA	QQ13030684
⚠ D534				
D535		4822 130 30621	DIODE 1N4148	QP13030621

POS. NO	VERS. COLOR	PART NO. (PCS)	DESCRIPTION	PART NO. (MJI)
D536		4822 130 30621	DIODE 1N4148	QP13030621
⚠ D541				
I		5322 130 34939	DIODE 1N5401 G GI/FAG	QQ13034939
⚠ D544				
D551				
I		4822 130 30621	DIODE 1N4148	QP13030621
D554				
D561		4822 130 30621	DIODE 1N4148	QP13030621
D562		4822 130 30621	DIODE 1N4148	QP13030621
D608		4822 130 80515	Z DIODE 5.1V C 0.5W	QP13080515
D609		4822 130 30621	DIODE 1N4148	QP13030621
D610				
I		4822 130 82743	LE DIODE TLHR4400TFK	QP13082743
D615				
D617		4822 130 82743	LE DIODE TLHR4400TFK	QP13082743
D618		4822 130 30621	DIODE 1N4148	QP13030621
D660		4822 130 83968	Z-DIODE 15V C 0.5W	QP13083968
D661		4822 130 80515	Z DIODE 5.1V C 0.5W	QP13080515
D670		4822 130 30621	DIODE 1N4148	QP13030621
IC1		4822 209 30178	IC LC7218 SANYO	QP20930178
IC2		4822 209 72748	IC LC7821 SANYO	QP20972748
IC3		4822 209 71785	IC LA1266 SANYO	HC10222030
IC4		4822 209 31981	IC SAA6579T PHILIPS	QP20931981
IC5		4822 209 33347	IC LM340AT-12 NSC	QP20933347
⚠ IC501		5322 209 86518	IC MC7805 CT	QQ20986518
⚠ IC502		4822 209 90579	IC MC78L18 ACP	QP20990579
⚠ IC503		4822 209 90581	IC MC79L18 ACP	QP20990581
IC601		4822 209 15331	IC M38172-M4-131 FP MIT	QP20915331
IC602		4822 209 90584	IC X24C04XICOR	QP20990584
IC600		4822 212 30842	IR-RECEIVER TFMS5360	QP21230842
IC603		4822 209 15334	IC M38174E8HFP PROG.KPL	QP20915334
T1		4822 130 40937	TRANS BC548B	QP13040937
T2		5322 130 44779	TRANS BC338-25	QQ13044779
T3		5322 130 44779	TRANS BC338-25	QQ13044779
T6		4822 130 40988	TRANS BC328-25	QP13040988
T7		4822 130 42121	TRANS 2SK30A-TM-Y1	HF200300B0
T8		4822 130 40988	TRANS BC328-25	QP13040988
T12		4822 130 44196	TRANS BC548C	QP13044196
T13		4822 130 40988	TRANS BC328-25	QP13040988
T15		4822 130 40937	TRANS BC548B	QP13040937
T16		4822 130 40902	TRANS BF240	QP13040902
T17		4822 130 40937	TRANS BC548B	QP13040937
T18		4822 130 40937	TRANS BC548B	QP13040937
T19		4822 130 44197	TRANS BC558B	QP13044197
T21				
I		4822 130 40937	TRANS BC548B	QP13040937
T23				
T25		4822 130 40937	TRANS BC548B	QP13040937
T161		4822 130 41096	TRANS BC550C	QP13041096
T261		4822 130 41096	TRANS BC550C	QP13041096
T301		4822 130 61755	TRANS BC560C	QP13061755
T302		4822 130 44461	TRANS BC546B	QP13044461
T303		4822 130 44461	TRANS BC546B	QP13044461
T304		4822 130 61755	TRANS BC560C	QP13061755
T305		4822 130 44461	TRANS BC546B	QP13044461
T306		4822 130 63852	TRANS BC880	QP13063852
T307		4822 130 44461	TRANS BC546B	QP13044461

(VERS. :VERSION, U:U.S.A, F:JAPAN, K:FAR EAST, **:EUROPE)

POS. NO	VERS. COLOR	PART NO. (PCS)	DESCRIPTION	PART NO. (MJI)
T308		5322 130 44779	TRANS BC338-25	QQ13044779
T309		4822 130 40988	TRANS BC328-25	QP13040988
T311		4822 130 62269	TRANS BDT65C	QP13062269
T312		5322 130 61575	TRANS BDT64C	QQ13061575
T361		4822 130 41096	TRANS BC550C	QP13041096
T401		4822 130 61755	TRANS BC560C	QP13061755
T402		4822 130 44461	TRANS BC546B	QP13044461
T403		4822 130 44461	TRANS BC546B	QP13044461
T404		4822 130 61755	TRANS BC560C	QP13061755
T405		4822 130 44461	TRANS BC546B	QP13044461
T406		4822 130 63852	TRANS BC880	QP13063852
T407		4822 130 44461	TRANS BC546B	QP13044461
T408		5322 130 44779	TRANS BC338-25	QQ13044779
T409		4822 130 40988	TRANS BC328-25	QP13040988
T411		4822 130 62269	TRANS BDT65C	QP13062269
T412		5322 130 61575	TRANS BDT64C	QQ13061575
T461		4822 130 41096	TRANS BC550C	QP13041096
T501		4822 148 81194	TRANS BC640	QP14881194
T511		4822 130 44461	TRANS BC546B	QP13044461
T512		4822 130 44461	TRANS BC546B	QP13044461
T513		5322 130 44864	TRANS BC517	QQ13044864
T551		4822 130 40988	TRANS BC328-25	QP13040988
T552		4822 130 40988	TRANS BC328-25	QP13040988
T553		5322 130 44779	TRANS BC338-25	QQ13044779
T554		5322 130 44779	TRANS BC338-25	QQ13044779
T562		4822 130 44461	TRANS BC546B	QP13044461
T571		4822 130 44461	TRANS BC546B	QP13044461
T572		4822 130 44197	TRANS BC558B	QP13044197
T600		4822 130 44197	TRANS BC558B	QP13044197
T602		5322 130 44779	TRANS BC338-25	QQ13044779
T603		5322 130 44779	TRANS BC338-25	QQ13044779
T604		4822 130 61705	TRANS 2SD1508 TOSHIBA	QP13061705
			RESISTORS	
R69		4822 100 20694	ESTR.SK10-A 100kΩ LIN	QP10020694
R119		4822 100 20694	ESTR.SK10-A 100kΩ LIN	QP10020694
R123		4822 100 20694	ESTR.SK10-A 100kΩ LIN	QP10020694
R300		4822 101 11691	POT. METER/BALANCE	QP10111691
R310		4822 100 10075	ESTR.S 10 100Ω	QP10010075
⚠ R317		4822 111 41024	KSW SI B 100Ω 5%	QP11141024
⚠ R318		4822 111 41024	KSW SI B 100Ω 5%	QP11141024
⚠ R323		4822 117 11898	KSW SI A 390Ω 5%	QP11711898
⚠ R326		4822 117 11898	KSW SI A 390Ω 5%	QP11711898
R330		4822 101 21253	POT. METER/LOUDSPEAKER	QP10121253
R333		4822 117 12573	MOW 0922 0.47Ω 10%	QP11712573
R400		4822 101 11692	POT. METER ALPS (TREBLE)	QP10111692
R4001		4822 101 11692	POT. METER ALPS (BASS)	QP10111692
R410		4822 100 10075	ESTR.S 10 100Ω	QP10010075
⚠ R417		4822 111 41024	KSW SI B 100Ω 5%	QP11141024
⚠ R418		4822 111 41024	KSW SI B 100Ω 5%	QP11141024
⚠ R423		4822 117 11898	KSW SI A 390Ω 5%	QP11711898
⚠ R426		4822 117 11898	KSW SI A 390Ω 5%	QP11711898
R432		4822 117 12573	MOW 0922 0.47Ω 10%	QP11712573
R433		4822 117 12573	MOW 0922 0.47Ω 10%	QP11712573

POS. NO	VERS. COLOR	PART NO. (PCS)	DESCRIPTION	PART NO. (MJI)
⚠ R541		4822 052 10221	KSW SI A 220Ω 5%	QP05210221
⚠ R542		4822 052 10221	KSW SI A 220Ω 5%	QP05210221
R600		4822 111 92219	R-NETZ 8X47kΩ	QP11192219
			MISCELLANEOUS	
DP		4822 130 91334	DISPLAY	QP13091334
F2		4822 214 51727	FILTER (ADJACENT CHANNEL)	QP21451727
F2		4822 242 72295	CER.RES.10 CSB456F11	QP24272295
F3		4822 157 62739	CERAMIK-FILTER 70	QP15762739
F4		4822 157 62739	CERAMIK-FILTER 70	QP15762739
F6		4822 242 71509	AM-IF SFL450J3	FF10045330
F7		4822 156 11092	FM-DEM.I	QP15611092
F9		4822 156 11104	FILTER (PILOT) LPF-V20	QP15611104
F11		4822 156 11104	FILTER (PILOT) LPF-V20	QP15611104
F610		4822 242 72527	CER.RES.86/13 CST4.0MGW	QP24272527
L1		4822 156 11094	MW-RF CIRCUIT	QP15611094
L2		4822 156 11095	LW-RF CIRCUIT	QP15611095
L16		4822 157 70423	DR AX 0207-GA 0.33µH	QP15770423
L17		4822 156 11091	COIL (LW-OSC.)	QP15611091
L18		4822 156 11089	COIL (MW-OSC.)	QP15611089
L19		4822 157 70425	DR 39mH	QP15770425
L21		4822 157 11068	DR AX 0309-GA 22µH	QP15711068
L335		4822 157 60207	RF INDUCTOR	QP15760207
L435		4822 157 60207	RF INDUCTOR	QP15760207
L616		4822 157 11068	DR AX 0309-GA 22µH	QP15711068
Q1		4822 242 72294	CRYSTAL 7.2MHz	QP24272294
Q3		4822 242 81319	CRYSTAL #170 A/C 4.332MHz	QP24281319
⚠ RL1		4822 280 60594	RELAY G2R-1A 12V DC	QP28060594
⚠ RL2		4822 280 60592	RELAY V23037-A0002-A102	QP28060592
WW01		4822 280 10317	RELAY G5Z 12VDC OMR	QP28010317
S300		4822 277 11646	SWITCH	QP27711646
S399		4822 277 11646	SWITCH	QP27711646
S611				
I		4822 276 13152	TACT SWITCH	QP27613152
S628				
⚠ SI2		4822 071 58001	SOLDERING FUSE-GR 800mA/T	QP07158001
⚠ SI3		4822 071 51252	SOLDERING FUSE-GR 1.25A/T	QP07151252
⚠ SI5		4822 071 52001	SOLDERING FUSE-GR 200mA/T	QP07152001
⚠ SI6		4822 071 53151	SOLDERING FUSE-GR 315mA/T	QP07153151

NOTE ON SAFETY :

Symbol ⚠ Fire or electrical shock hazard. Only original parts should be used to replaced any part marked with symbol ⚠. Any other component substitution (other than original type), may increase risk of fire or electrical shock hazard.